Coal Fly Ash Release
Fact Sheet

DEPARTMENT OF ENVIRONMENT & CONSERVATION

Revised as of October 1, 2009

The cleanup at the Tennessee Valley Authority (TVA) Kingston Fossil Plant continues under the oversight of the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC). In May 2009, EPA issued an Administrative Order on Consent to oversee cleanup at the site under the federal Superfund law. The enforcement order issued by the Tennessee Department of Environment and Conservation (TDEC) in January 2009 continues to be fully enforceable, and TDEC and EPA are working closely together and with other state and federal agencies partnering to protect public health and address environmental issues during both the time critical and non-time critical phases of the cleanup.

• Update on Spill Cleanup

Both EPA and TDEC have on-scene coordinators working at the TVA Kingston cleanup site. This allows the two agencies to coordinate and provide direct oversight to the cleanup and environmental monitoring activities ongoing at the site.

Under EPA's May 2009 administrative order, EPA, in consultation with TDEC, is overseeing the removal of coal ash from the Emory River and surrounding areas to ensure full compliance with the federal Superfund law. This is referred to as a "time critical" action under the administrative order. Once the time critical work is complete, work at the site will transition to non-time critical actions, which include the closure of the Kingston dredge cells and removal of ash from Berkshire Slough.

To date, more than one million cubic yards of ash have been removed from the Emory River and east of dike two. That's about one-third of the total amount of ash scheduled for removal under the time critical action.

Consistent with Section XIII, 5.A. of TDEC's Commissioner's Order, the department's expectation remains that all solid waste released from the TVA Kingston landfill, to the maximum extent practicable, will be removed from the Emory River, Swan Embayment, tributaries to the Emory River and the ground surface and that natural resources will be restored to their original state.

TDEC has communicated to TVA the department's expectation that ash removal and restoration of the waters of the state will continue without interruption during the transition from the time critical actions to the non-time critical actions. Restoration of Berkshire Slough is a priority for the state in the non-time critical action phase.

One of the other actions covered by the non-time critical phase will be closure of the developed ash waste cells know as Dredge Cells 1, 2, 3 and 4 and closure of the ash process area known as the ball field. TDEC agrees that EPA will serve as lead agency to oversee these actions. TDEC will remain an active participant with EPA in the non-time critical action and will provide review of all work plans and remedy designs for concurrence with EPA that the actions meet Tennessee's solid waste rules and the requirements of the Commissioner's Order.

The public will have an opportunity to review and comment on the non-time critical activities prior to the final remedies being determined.

• Natural Resource Damages

Natural Resource Damage Assessments are used to assess injury to natural resources that are held in the public trust. In Tennessee, TDEC Commissioner Jim Fyke serves as the lead trustee for the state in the Natural Resource Damage Assessment process. Natural resources are defined broadly in the federal Superfund law, known as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Under CERCLA, natural resources include "land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources…" that are held in the public trust. The Department of Environment and Conservation has obtained the services of Industrial Economics, Inc. to assist state and federal trustees in assessing and recovering natural resource damages from TVA as a result of the spill. Recovering natural resource damages is a step toward restoring these resources for the public.

• Environmental Monitoring and Sampling

TDEC, EPA and TVA continue to conduct environmental monitoring and sampling activities in and around the Kingston site. In general, monitoring and sampling results have remained consistent throughout the course of the cleanup. A general overview and update is included below.

Air – Monitors measuring particulates 10 microns in size and smaller (PM10) and monitors measuring particulates 2.5 microns in size and smaller (PM2.5) have not, to date, indicated an exceedance of National Ambient Air Quality Standards.

Lab analysis has detected some metals at very low levels. The Department of Health indicates these levels do not present health concerns.

Unfortunately, the local community experienced deposition from the TVA Kingston facility on Sept. 18, 2009. This was a result of a process problem at the plant, and unrelated to the spill material itself. The PM10 monitor did measure a spike on Sept. 18, though it did not exceed National Ambient Air Quality Standards. This event is reviewed in more detail under the header, "September 18 Deposition Investigation."

Drinking Water and Well Water – Regular testing performed by TDEC of municipal drinking water supplies indicates drinking water continues to meet drinking water standards established by EPA for public health protection.

Sample results for more than 100 private wells have not indicated metals present above primary drinking water standards. The department continues to sample "sentinel" wells at least quarterly to evaluate ground water quality over time. The next round of sentinel well samples is scheduled for mid-November.

River Water – TDEC, EPA and TVA are monitoring water quality in the Emory, Clinch and Tennessee Rivers, particularly during dredging. TDEC continues twice weekly sampling. Metals levels were highest immediately following the spill and whenever the ash has been re-suspended in the water column by heavy rainfall, or disturbances such as boat traffic. Generally, higher metals have been observed to be associated with solids in water samples.

TVA collected samples Sunday morning, Sept. 27, following an extended rain event on Saturday. TDEC will review those results when they are available from the lab.

Fish Tissue Monitoring – Fish are being collected each spring and fall to be analyzed for metals associated with coal ash. Various species were collected in the spring. As previously reported, two catfish collected by the Tennessee Wildlife Resources Agency in January-April 2009 were found to have metals present above human health protection standards for Mercury. Selenium levels were below EPA's proposed toxicity standards for protection of fish and other aquatic life.

The department has reviewed additional in-depth analysis performed by the Oak Ridge National Laboratory on fish collected in the spring of 2009. ORNL performed the analysis for TVA on fish health as a result of the spill. In general, it found fish health below the spill site similar to that of fish collected at the reference site well above the spill area. It also indicates the need for additional evaluation to continue over time.

The department urges the public to follow the fishing advisory for the lower Clinch River, which existed prior to the ash spill. In the Clinch River arm of Watts Bar, which includes the lower Emory River, there is a fish consumption advisory against eating striped bass and a precautionary advisory for catfish and sauger. A precautionary advisory means that children, pregnant women and nursing mothers should not consume the fish species named. All other persons should limit consumption of the named species to one meal per month.

Given the data generated to date, the existing fishing advisory is protective of public health. The state will continue to monitor the levels of contaminants in fish tissue and will inform the public if current conditions change.

• Additional Study

Environmental chemistry experts from the U.S. Army Engineer Research and Development Center (ERDC), located in Vicksburg, Mississippi, conducted a study to determine whether continued cleanup of the ash by dredging the Emory River would promote the release of metals within the ash and pose additional risks to the environment. In May 2009, ERDC

researchers collected ash and water samples from various areas of the spill and from the dredging operations. In addition to extensive work to determine the presence and types of metals in the coal fly ash and waters, ERDC researchers constructed experiments designed to test the very extremes of environmental and operational conditions, including dredging, that would cause the ash to destabilize and release its contaminants. It was under these extreme conditions that biological tests were performed to measure the potential effects on native fish and mussels.

ERDC's results indicate the ash material possesses high stability and is largely resistant to high releases of toxic metals under extreme environmental conditions. Of the metals released from the ash during this study, none exceeded EPA regulatory values, with the exception of selenium. Extensive characterizations revealed that this behavior was attributed to the metals being present in relatively stable, less toxic forms, in the river. Metals released from the ash were found mainly in their less toxic forms. The only major exception to this was from the stilling pond, not the river, where the more toxic form of selenium (selanate) was measured in one water sample.

Standard toxicity tests from the above experiments showed no evidence for mortality of the native fish used in the tests. Fish tissues did accumulate selenium, though its measured concentrations were below EPA screening values. While the long-term effects on fish due to metals released from the fly ash during dredging remain unclear, the reported chemistry and biological test results suggest a limited potential for toxicity related to fish. The study provides the basis for continued dredging of the Emory River for removal of the spilled fly ash.

TDEC anticipates receiving the final draft report from ERDC in October and will make it available on the department's TVA Kingston Update Web site.

• September 18 Deposition Investigation

Unrelated to the ash spill, the TVA Kingston plant experienced a process problem on Sept. 18, 2009 that resulted in ash deposition in the surrounding community. TDEC responded immediately to this incident, collected a sample from a local residence and visited the plant. The sample results indicate the material in the sample consists mostly of fly ash. Prior to receiving the sample results, TDEC required information of TVA to help determine the cause of the deposition and that investigation is ongoing.

The department is reviewing several different scenarios as an explanation. Some involve the testing of higher sulfur coal, and some are unrelated to that testing, including the oil fire start up of another unit not undergoing testing. We are committed to sharing the results with the community once the investigation into the cause is complete.

In the meantime, TVA has suspended test burns and at the request of TDEC, voluntarily surrendered the variance in opacity standards (visible emissions from the stack) issued by the Air Pollution Control Board. It is important to note, the variance did not give permission for deposition, but rather allowed TVA to perform experiments with different types of coal in anticipation of the startup of its new scrubbers. The scrubbers will remove gaseous sulfur dioxide that can form ultra fine particulate matter that can be especially detrimental to public health. Similar testing at other TVA facilities never resulted in this type of problem.

• Gypsum Pond Discharge Permit

Also unrelated to the ash spill, TDEC's Division of Water Pollution Control last week issued a discharge permit for the TVA Kingston Plant's new gypsum holding pond. The permit sets effluent limits for wastewater created by TVA's new air pollution control equipment, and was the subject of a public hearing held in Kingston on June 8, 2009.

When the new air pollution controls, known as Flue Gas Desulfurization or FGD, go online, they will generate gypsum, a byproduct of using limestone slurry to remove sulfur pollutants. Construction of the air pollution controls is nearing completion and they are expected to go online in November. In addition to water quality protections, the discharge permit includes specific requirements regarding dike stability, inspections and inspector qualifications. It can be found on TDEC's Web site at www.tn.gov/environment/kingston/pdf/comm_guid/tn0080870final_2009.pdf.

• Monthly Newsletter

TDEC will begin compiling a monthly newsletter as an additional tool to provide the community with information related to the department's ongoing role in the monitoring and cleanup at the TVA Kingston site. The newsletter will be available in the middle of each month at www.tn.gov/environment/Kingston. Anyone who wishes to receive it by email may sign up by emailing Ask.TDEC@tn.gov and including "TVA Kingston Monthly Newsletter" in the subject line.

TDEC On-Scene Coordinator

TDEC's representative at the TVA Kingston recovery site is Barbara Scott. She can be reached at 865-230-1211 or Barbara.Scott@tn.gov.

EPA Community Involvement Coordinator

EPA has a community involvement coordinator to assist the community with questions about the site. Stephanie Y. Brown may be reached at 800-564-7577 or 678-575-8505.

Useful Web sites

Tennessee Department of Environment and Conservation:
http://www.tn.gov/environment

Environmental Protection Agency:
http://www.epakingstontva.com

Tennessee Department of Health:
http://www.tn.gov/health

TVA:
http://www.tva.gov/kingston

Important Numbers

TDEC:	888-891-8332
EPA Community Involvement Coordinator:	800-564-7577
TN Dept. of Health:	800-404-3006
Roane Co. Health Dept.:	865-354-1220
TVA Public Information:	865-717-4006
TVA Outreach Office:	865-632-1700

If you have questions, contact:

Tennessee Department of Environment and Conservation
888-891-8332

Updates, including sample results, monitoring plans, enforcement orders and TVA submittals are available on the Internet at:
www.tn.gov/environment
under "TVA Kingston Update."

Authorization No. 327008 October 2009 Web site & Public Meeting use